

台灣週邊水域產尖頭細身飛魚(*Hirundichthys oxycephalus*)之系群

結構暨其管理意涵

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本研究利用耳石形態學暨耳石核心微化學兩種分析方法並配合先前之相關研究共同探討臺灣周邊水域產尖頭細身飛魚 (*Hirundichthys oxycephalus*) 可能之系群結構。分析樣本來源為 2015 年臺灣北部、南部暨西南(澎湖)海域所採之漁獲。結果顯示，臺灣北部及南部所採之尖頭細身飛魚其耳石形態與耳石核心內微量元素均有顯著差異 (MANOVA, $p < 0.05$)，而澎湖海域之尖頭細身飛魚耳石形態與南、北部採到的個體均無顯著差異，但耳石核心內微量元素則與北部海域的個體有顯著差異。此結果說明，臺灣北部與南部所採之尖頭細身飛魚可能分屬不同之系群。本研究分析結果也顯示，利用多重方法的整合性分析為魚類系群判別的有效工具，並將提供臺灣飛魚漁業及東北部飛魚卵漁業重要之管理依據。

關鍵字：尖頭細身飛魚、系群結構、耳石形態學、耳石微化學

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Stock structure of *Hirundichthys oxycephalus* in surrounding waters of Taiwan, and its management implications.

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The possible stock structure of bony flyingfish (*Hirundichthys oxycephalus*) in surrounding waters of Taiwan were examined based on both otolith morphometry (including morphometric indices and elliptical Fourier analysis) and microchemistry of core of the otolith (including Sr/Ca, Ba/Ca, Mg/Ca, Zn/Ca and Mn/Ca ratios) in company with other previous studies. Fish samples were collected from northern, southern and southwestern (Penghu) waters of Taiwan in 2015. The results showed that *H. oxycephalus* collected from northern were significant differences in both elemental ratios and combined morphometric analysis from those in southern Taiwan (MANOVA, $p < 0.05$), but samples obtained from southeastern (Penghu) Taiwan was different from those in northern Taiwan only in elemental ratios, but not for morphometric analysis. These results implied that two geographically different stocks may be existed for *H. oxycephalus* collected in Taiwan. Our results highlighted the effectiveness of holistic approaches in stock discrimination, and may provide useful guideline for future management of flyingfish and flyingfish roe fisheries in Taiwan.

Key word: bony flyingfish (*Hirundichthys oxycephalus*), stock structure, otolith morphometry, otolith microchemistry

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